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ABSTRACT

The specific objectives of the project were to (1) computerize previously developed occupational information for on-line delivery capabilities as well as for development of computer output microfiche, (2) develop manual pinsorts to aid secondary and postsecondary students in exploring occupational information, (3) develop special materials for blind students and for slow learners, (4) develop user guides on use of the various delivery systems, and (5) provide cost data on the different systems. An updated version of Tennessee's occupational information was computerized to provide on-line teletype terminal access to the information. Direct copy microfiche was developed from the printed data base. Manual career exploratory pinsorts for accessing the junior high occupational information as well as the secondary-postsecondary version of the computerized information were developed. In addition, braille and audio tape materials were developed for use by blind students and filmstrips with audio tape narrations were developed for use by slow learners. User guides were developed for use by students, parents, teachers, counselors, and librarians on the use of each of the different types of delivery systems. Evaluation data collected from students, parents, teachers, counselors, and librarians revealed all the occupational information delivery systems were accepted favorably. Suggestions were received from users for making minor revisions in each delivery system to improve its use. This report includes a detailed description of the project's methodology, evaluation results, and summary of findings. (HD)

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FINAL REPORT

Project No. 498AH50245

Grant No. G007500322

IMPLEMENTATION OF A STATE-WIDE COMPUTER-BASED OCCUPATIONAL INFORMATION SYSTEM WITH MULTI-FACET DELIVERY SYSTEMS

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ABSTRACT

IMPLEMENTATION OF A STATE-WIDE COMPUTER-BASED
OCCUPATIONAL INFORMATION SYSTEM WITH
MULTI-FACET DELIVERY SYSTEMS

The major purpose of this project was to adapt and implement alternative delivery approaches for providing occupational information to students in Tennessee. The specific objectives of the project were to: (1) computerize previously developed occupational information for on-line delivery capabilities as well as for development of computer output microfiche, (2) develop manual pinsorts to aid junior high, secondary and postsecondary students in exploring occupational information, (3) develop special materials for blind students and for slow learners, (4) develop user guides on use of the various delivery systems, and (5) provide cost data on the different systems.

An updated version of Tennessee's occupational information was computerized to provide on-line teletype terminal access to the information. The computerized package used in the project was developed by the University of Oregon. Since the Oregon package was too limited to handle all Tennessee's data, the computer output microfiche could not be produced. Therefore, direct copy microfiche was developed from the original printed data base.

Manual career exploratory pinsorts for accessing the junior high occupational information as well as the secondary-postsecondary version of the computerized information were developed. In addition, braille and audio tape materials were developed for use by blind students and filmstrips with audio tape narrations were developed for use by slow learners.

User guides were developed for use by students, parents, teachers, counselors and librarians on the use of each of the different types of delivery systems. Inservice training was provided to all users at the beginning of the field test of the delivery systems in schools throughout Tennessee.

Evaluation data collected from students, parents, teachers, counselors and librarians revealed all the occupational information delivery systems were accepted favorably. Suggestions were received from users for making minor revisions in each delivery system to improve its use.

PREFACE

This report contains the description and results of a project conducted to field test a variety of delivery systems for providing occupational information. The major purpose of the project was to adapt and implement alternative delivery approaches for providing occupational information to students in Tennessee. The project was conducted during the period of July 1, 1975 through June 31, 1976.

The following project staff members are acknowledged for their services in the successful completion of this project: Dr. Robert Coker, associate project director during first phase of project; Dr. Edwin Lamberth, associate project director during second phase of project; Mrs. Dulcie Peccolo, development and inservice training coordinator; Ms. Janet Bell and Mr. George Traver, graduate assistants; Karen Kidd and Judy Robison, technical assistants; Mrs. Pam Moss and Mr. Denny Cody, special consultants.

Appreciations are expressed to the many businesses and industries in Tennessee which provided job information and to school administrators, teachers, counselors, librarians, parents, students and advisory committee members who participated in the study.

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Walter A. Cameron
Project Director

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CHAPTER I

INTRODUCTION

The choice of what a person selects as a career is one of the most important decisions one makes in a lifetime. The choice of a career is usually an indication of one's way of life. The choice of career influences where a person lives, the choice of friends, living style, health and economic life. The knowledge explosion and the continuously changing world of work of our society demand that public education provides information and experiences to assist students in making appropriate career decisions.

During the past four years, a state-wide occupational information program has been developed and evaluated for the State of Tennessee. The four components of the program are: (1) Primary INFOE (Information Needed For Occupational Enlightenment) consisting of filmstrips, audio recordings and teacher guides for students (K-3); (2) Elementary INFOE (Information Needed For Occupational Exploration) consisting of 500 cartoon formatted career briefs, teacher guides and overhead transparencies of career clusters for students (grades 4-6); (3) Junior High INFOE (Information Needed For Occupational Exploration - In Depth) was designed to provide seventh through ninth grade students with exploration of 15 career clusters, 360 job titles and major vocational programs; (4) Secondary-Postsecondary INFOE (Information Needed For Occupational Entry) was designed to provide specific occupational and educational planning materials for secondary and postsecondary school students.

The developed components of the Tennessee INFOE program have met with remarkable success (Cameron, 1971; 1974). However, it was believed that the data of the INFOE program could be used by a wider range of students if alternative delivery systems were available. With this in mind the major thrust of this project was to adapt and implement alternative delivery approaches for providing occupational information to students in grades seven through two years of postsecondary education.

Specific Objectives

The specific objectives of the project were to:

1. Computerize the Tennessee occupational data to provide on-line delivery capabilities as well as computer output microfiche for use by students.

2. Develop manual pinsort capabilities for exploring both the junior high and the secondary school level occupational information now available in Tennessee.

3. Develop delivery systems applicable for presenting occupational information to special user groups, e.g. blind and disadvantaged students.

4. Develop user guides for students, teachers and counselors on the various occupational information delivery systems.

5. Evaluate reactions of students, teachers, counselors and parents to the various occupational delivery systems.

6. Provide cost analyses of the different types of occupational information delivery systems.

Need for Study

Research and development activities on alternative approaches to career guidance indicate, beyond any reasonable doubt, that systematic planning must be given to providing occupational information to students in a form that is usable. According to Hansen (1967), students need information that will provide: (1) knowledge of the nature of career development itself; (2) knowledge about the structure and trends of labor force; (3) skill in the process of decision making; and (4) skill in synthesizing data.

Occupational information programs are important especially in a time of recession and high unemployment. Today, we have situations in which even college graduates are searching for any job - many times without relationship to their course of study. At the same time, many high school students are dropping out of school or are graduating without necessary skills to get and hold a job.

Guzzardi, Jr. (1975, p. 124) pointed out:

> Much of this displacement is attributable to a slow economy, but the core of the trouble does not lie there. It comes with the spreading conviction that in our society, the world of education and the world of work are far too isolated from each other.

A viable occupational information program can help bridge

this gap since it requires close working relationships between education and the business world.

It is a difficult task for an individual to decide or know about the complex job market structure, not to mention being sure he will like a particular job and find it rewarding. Suzuki (1973) proposed that each community and the high schools within it are unique, thus career guidance programs will probably be unique also. He further suggested that a flexible guidance system is needed to handle individual area needs and a broad range of methods and techniques should be considered for inclusion in any program.

In a study involving a survey of counselors to determine the primary problems facing youth in the transition from school and work, Eggeman, et al., (1969) reported that 49.5 percent said there was a lack of information about work and training opportunities. In addition, counselors (62.8 percent) stated that schools should provide more and better occupational information.

Bice, et al., (1973, p. 20-21) in a study of counselors' and students' reactions to counselors in Tennessee concluded:

1. Counselors lack sufficient in depth work experience necessary to facilitate career counseling.

2. Counselors are overly concerned with testing.

3. Students desire more information about careers.

4. Counselors have extremely limited knowledge about career education and occupational possibilities available within the local community.

Law (1968, p. 1) addressed the status of the counseling movement and concluded:

> Although it may be said that the guidance movement has brought many improvements to secondary education, it must be admitted that its value to a large segment of the school population has been less than sensational.

Several factors are necessary in designing a career guidance program that would provide usable occupational information. Tiedeman and Field (1962) concurred when they

urged the development of a guidance program that would help each student to choose his goals and subsequently to achieve them. The idea strongly implied is that a guidance program must be part of, not stand beside, education.

Flanagan (1970), Cocswell (1967) stressed the importance of individualized instruction to permit students to learn and explore at their own pace. In addition, Jones (1965) stated guidance professionals have begun to advocate the importance of behaviorally specific, student-oriented objectives and to use these in guidelines for systematically planning career exploration activities.

Media being used in various occupational exploration programs are varied, ranging from materials such as films and slides through games which provide simulation activities, decision-making exercises on computers, paper copy of occupational descriptions to the use of microfiche and/or aperture cards, video tapes and 8 mm loop films. Boocock (1967) stressed the role of the Life Career Game and Krumboltz (1968) has explained the vocational Simulation Kits; Super (1970) stressed the role of computer-assisted counseling. Holland (1972) explained the Self Directed Career Program which makes use of describing jobs and presenting them via printed word.

Much has been reported concerning computer-based guidance systems such as CVIS (Computer-assisted Vocational Information System, Harris, J., 1967); and ECES (Educational and Career Explorations System, Minor, F. J., Super, D. E. et al. 1970).

Campbell and Vetter (1971, p. 4) suggested that the "basic purpose behind such systems is to permit inquiry concerning facts bearing on a particular type of institution or realm of activity." These authors add that the "computer as a tool for career guidance offers a great deal if used wisely." However, there can be a danger of:

> ... relying too heavily on the counselor or the computer for specific tasks; the critical balance involves the appropriate complementary selections of each.
>
> Several additional problems have delayed the wide-scale adaption of computers. One of these is cost . . . the other problem involves training counselors to accept the use of computers . . . Wide-scale adaption cannot occur without major education thrusts.

One primary characteristic that Campbell, et al., advocated in their systems model for career guidance was that the program needs to be operationally demonstrated in pilot locations and subsequently replicated in other locations. Thus, this provides a strong point for alternate delivery systems since not all areas can afford highly technological approaches. Campbell and Vetter (1971, p.8) advocate that "technology is best used as a tool, not as an excuse for instituting a program. If computers, overhead projectors, etc., will help to implement a well planned program, use them. If not, don't."

Personnel in the U.S. Department of Labor (1974, p. 10) suggested the development of occupational information should take into account:

> . . . the kind and number of information topics to be presented to the user; sources of information; the level of geographic specificity of these topics; the universe of occupations to be covered; the length and detail of information presentation; the format and language level for presentation of information; accuracy and currency of information; the feasibility and cost of obtaining and processing information; and finally, a procedure to provide feedback from users and developers to data producers.

In summary, the delivery component of an occupational information system should be effective with persons of varying ability and experience. The delivery vehicles such as computers, microfilm viewers, paper copy, cassette tapes, filmstrips and microfiche are all viable alternatives. Choosing one or more of these vehicles necessitates the consideration of geographic location of users, cost factors, format of information and the utilization phase of the information.

Further, the Department of Labor (p. 27) reported that:

> . . . varied media should be used to disseminate occupational information. Such variation is important as a means of communicating information to those persons who do not respond well to only printed word. The use of varied media, however, should be accomplished in a manner which permits them to be components of an integrated delivery system.

Having alternative delivery vehicles increases the options of local users and makes information applicable to a variety

of users. Hoyt (1968) suggested that an occupational guidance system must exist to permit one to be "free to choose and decide for himself" what is applicable in different settings.

In addition to the need pointed out in the review of literature, a push to expand vocational education in Tennessee makes it necessary for Tennessee to pursue the development of a comprehensive occupational guidance program. In 1973 the Eighty-eighth Tennessee General Assembly passed House Bill 1203 and Senate Bill 1001 which provide Tennessee with approximately 190 million dollars to expand vocational education. The Comprehensive Vocational Education Plan developed to implement the new legislation specifies the need for 1,543 new vocational education instructors and 1,279 guidance counselors for the State of Tennessee within the next four years. To assist students and working adults to take advantage of the new vocational education opportunities will require the implementation of a statewide occupational information system with various delivery approaches.

CHAPTER II

METHODOLOGY

In this section, an overview of previous development efforts which were used in this project are discussed. In addition, the procedures used in attaining each specific objective of this project are presented.

Background of Previous Occupational Information Development Efforts

Since the major purpose of this project was to research different delivery systems for putting occupational information in the hands of users, some background on previous development efforts is necessary. This project dealt with the tryout of various delivery systems for using the previously developed junior high and secondary-postsecondary components of the Tennessee INFOE program.

Junior High INFOE (Information Needed For Occupational Exploration - In Depth) was developed to provide seventh, eighth and ninth grade students with in depth exploration of career clusters, job titles and major vocational programs. The Junior High kit contains information on 360 job titles and on 50 vocational programs and a teacher-counselor's guide for integrating the kit's use into the junior high school curricula. Field testing of this kit was completed during the spring of 1975.

Secondary-Postsecondary INFOE (Information Needed For Occupational Entry) was designed to provide occupational and educational planning information for secondary and postsecondary school students. The Secondary INFOE kit, which had been used on a state-wide basis for 3 years, consisted of microfilm aperture cards containing information on 475 job titles, 50 vocational and 42 technology programs, 124 postsecondary institutions and a counselor-students user guide. The job information was localized to the nine economic planning districts in Tennessee and had previously been updated annually.

Procedures

An advisory committee made up of previous users of the INFOE materials and state leaders in guidance and vocational education provided directions for the conduction of this project. Appendix A contains the names of the members of this committee.

The first advisory committee meeting was held during August, 1975. The committee members at this time were given an orientation to the overall project and their advice was sought on the type and content of occupational information to be made available to users.

During April, 1976, the advisory committee met in Chattanooga, Tennessee. During this meeting an on-site visitation was made to Kirkman Technical School to allow committee members to visit with students who had used the various types of the developed delivery systems. At the end of the visitation sub-groups of the committee gave reports on their reactions to various phases of the project.

Advice on sources of material and information was sought from individual committee members throughout the conduction of the project. Individual committee members provided valuable advice on contact people and sources of information which contributed to the successful completion of the project.

Objective One

The following procedures were utilized in attaining Objective No. 1, which was to:

> "Computerize the present Tennessee occupational information data to provide on-line delivery capabilities as well as computer output microfiche for use by secondary and postsecondary students."

The previously developed Secondary-Postsecondary INFOE materials were updated during July and August, 1975, and prepared for input in a computer package developed by the University of Oregon (McKinlay, 1974). Since the original computer package from Oregon was only designed for 231 job titles and the Tennessee INFOE program consisted of 500 job titles, there was a delay in getting the original computer program expanded to take care of the Tennessee information. Therefore, the project proceeded with the development of the microfiche version of the information while waiting to receive Oregon's revised computer program.

Since it was impossible to produce the COM (computer output microfiche) from the computer tapes as originally intended, direct copy of the information consisting of 4 pages of information on each of 500 job titles was completed. Two hundred sets of this microfiche with counselor/student guides for its use were disseminated to 144 senior high schools and 13 postsecondary institutions in Tennessee.

Inservice training on the use of the Secondary-Post-secondary INFOE materials was provided for counselors, teachers and/or librarians at each participating school. The inservice training and dissemination efforts were conducted during November, 1975.

While waiting for the expanded computer package from Oregon, the project staff put in 231 job titles on the original Oregon computer package. Test use of this limited package was begun during November, 1975, at the computer center at Southern Missionary College, Collegedale, Tennessee. Five high schools and two four-year colleges within the local telephone service area were supplied with teletype terminals to test the limited computerized information. In addition a statewide 800 telephone line was installed so that selected schools in other parts of Tennessee could test the computerized system.

During the latter part of December, 1975, an expanded version of the computer package was received from Oregon. A total of 434 job titles from the 500 job titles of the Tennessee INFOE program was compiled on the revised computer package. The 5 high schools and 2 colleges within the local telephone service area continued to use the computerized version as new information was added. In addition demonstrations were held throughout the state in high schools using the 800 telephone line and a portable teletype terminal with acoustical coupler.

Many technical problems with the computer program occurred throughout the field test period from January, 1976, through May, 1976. Attempts were made to correct the problems as they occurred. However, due to the fact the project staff had to rely on the revised programming to be done by the computer programmer at the University of Oregon, there were short periods of time the computerized program could not be used at all. A few minor problems were not solved before the field test period ended in May, 1976.

Two hours of inservice training were provided to all counselors and librarians who supervised student use of the computerized information system. Frequent visits were made to each school to assist with use of the teletype terminals. Student guides were provided to all students who used the terminals. Approximately 1400 students used the computerized information for an average of 30 minutes each during the field test period.

Objective Two

The following procedures were utilized in attaining Objective No. 2, which was to:

"Develop manual pinsort capabilities for exploring both the junior high and the secondary school level occupational information now available in Tennessee."

A manual pinsort made of 360 plastic 3¼ inch by 6 inch cards was developed for junior high students to use in exploring the 360 job descriptions in the Junior HIgh INFOE materials. The junior high pinsort card consisted of the following coded sections to help students explore careers based on their own interests.

1. Fifteen clusters (15 choices)
2. Education level (5 choices)
3. Interests (10 choices)
4. Courses (subject matters areas - 12 choices)

Each of the 360 junior high pinsort cards contained 42 holes to be used for coding each of the 360 job titles individually. After completing the pinsort questionnaire (see Appendix B) students sorted the cards using the answer codes from the completed questionnaires.

A similar pinsort was developed for use in selecting job titles from the Secondary-Postsecondary INFOE materials. The Secondary-Postsecondary Pinsort consisted of 500 plastic cards coded with 50 codes of a more specific nature than the junior high version. An example of the Secondary-Postsecondary Pinsort Questinnaire is shown in Appendix C. This pinsort questionnaire was patterned after the computerized questionnaire.

Sets of the junior high and secondary-postsecondary pinsorts were disseminated to all schools which had agreed to field test the INFOE materials. Inservice training on the use of the pinsort was provided to every counselor, teacher and librarian who were responsible for supervising student use of the materials. Inservice training on use of the pinsorts was provided at the time the pinsorts were disseminated to schools.

Objective Three

The following procedures were utilized in attaining Objective No. 3, which was to:

"Develop delivery systems applicable for presenting occupational information to special user groups; e.g., blind and disadvantaged students."

In consultation with educators and administrators at institutions for the blind, the project staff identified

50 job titles of pertinence to blind students. Information on these job titles was prepared in a special format for presentation to blind students. One project staff member recorded the information for 50 job titles on audio tapes. These tapes were duplicated on audio cassette tapes and indexed in braille for use by blind students.

Information contained on the cassettes was reproduced in braille. The production of the braille masters was completed by prison inmates at the Tennessee State Penitentiary in Nashville, Tennessee. The master braille sheets were reproduced on plastic for student use.

The braille and audio cassette materials were disseminated to 4 public schools and 2 public agencies which worked with blind students in Tennessee. Inservice training on the use of the materials was provided to counselors and teachers who worked with the blind or sight-impaired students.

Since it was recognized that not all students responded well to printed materials, a filmstrip series was developed to present occupational information to special students. The project staff decided to concentrate on producing materials for the special education students who were identified as slow learners.

Fifteen filmstrips with accompanying audio cassettes and a user's guide were developed to present information on 84 job titles selected to be of interest to slow learners. Special education teachers and supervisors were consulted in selecting and preparing information for these filmstrips. Titles of the filmstrips are presented in Appendix D.

The filmstrips were field tested in 28 schools in Tennessee. Inservice training of the use of the materials was provided at the time the materials were delivered to the schools.

Objective Four

The following procedures were utilized in attaining Objective No. 4, which was to:

> "Develop user guides for students, teachers and counselors on the various occupational information delivery systems."

User guides were developed to provide detailed instructions on how to access and use the different approaches to

exploring occupational information. The following user guides were developed for use by students, counselors and teachers:

1. Seventh Grade Guide to Junior High INFOE
2. Eighth Grade Guide to Junior High INFOE
3. Ninth Grade Guide to Junior High INFOE
4. Guide to Secondary-Postsecondary INFOE for Counselors and Students
5. A Guide to INFOE: Orientation to the World of Work
6. User's Handbook to Computerized INFOE
7. Index to INFOE for the Blind

In addition to the above, a slide/tape inservice training package was developed and used by the project staff in orienting users to all the materials.

Objective Five

The following procedures were utilized in attaining Objective No. 5, which was to:

"Evaluate reactions of students, teachers, counselors, and parents to the various occupational information delivery systems."

Throughout the project, interviews were conducted with students, teachers and counselors to solicit their reactions to the application of the various delivery systems for their use. In addition, questionnaires designed to obtain information on the strengths and weaknesses of each delivery approach were administered to users at the end of the project. The results obtained from these questionnaires are presented in Chapter III.

Objective Six

The following procedures were utilized in attaining Objective No. 6, which was to:

"Provide cost analyses of the different types of occupational information delivery systems."

Overall staff time costs for the composite of the developmental efforts of the delivery approaches used in this project amounted to approximately $50,000. Since much of the development efforts for the various approaches utilized the same developed information it was impossible to document the developmental costs for each approach

separately. Therefore, the cost analyses on the different approaches are presented in terms of actual costs of operating each approach.

For comparison purposes the costs of operating each delivery approach to serve 1,000 students is presented in Table 1. Inservice training costs are not shown since they were judged to be about the same for each package.

Table 1 shows the total cost and the cost per student for serving 1,000 junior high students (grades 7, 8 and 9) with the junior high microfiche-pinsort package. The total cost of $740.00 or $.74 per student was based on 4 sets of junior high microfiche with guides at $75.00 per set, 4 sets of pinsorts at $80.00 per set and pro-rated cost of 4 microfiche readers at $30.00 each per year. All costs described represent actual production or pro-rated costs. The approximate cost of microfiche readers used during the project was $150.00 each and the expected life of each was 5 years.

The total cost for serving 1,000 secondary or post-secondary students with the secondary-postsecondary microfiche-pinsort package was $660.00 or $.66 per student. The total cost shown in Table 1 was based on 4 sets of secondary-postsecondary microfiche with guides at $75.00 per set, 4 sets of pinsorts at $60.00 per set and pro-rated costs of 4 microfiche readers at $30.00 each per year.

As shown in Table 1 the actual cost of the 4 sets of filmstrip-audio cassette packages used in the project to serve 1,000 students during a period of one school year was $400.00 or $.40 per student. The production cost per set of the 15 filmstrips used in this project was $75.00 per set and the cost of accompanying audio tapes and guides amounted to a total of $25.00 per set. Thus, actual production cost of each filmstrip-audio cassette package was approximately $100.00. Since most schools already have filmstrip projectors with cassette playback recorders available, no cost was included for the equipment used.

As shown in Table 1, the total cost of local on-line computer access per 9 month school year which would provide 1,000 students with approximately 1 hour of total time each was $2925.00 or $2.92 per student. This total is based on telephone line and computer costs per month of $250.00 and teletype terminal with acoustical coupler hook-up at a rental charge of $75.00 per month. These costs were the actual per month costs experienced during the six month field test period of this project.

With on-line access using an 800 dial-up long distance

TABLE 1

COSTS ASSOCIATED WITH SERVING ONE THOUSAND STUDENTS PER SCHOOL YEAR FOR THE DIFFERENT TYPES OF DELIVERY APPROACHES

Delivery Approach	Total Cost for 9 Month Period	Cost per Student
Junior High Microfiche - Pinsort Package	$740.00	$.74
Secondary-Post secondary Microfiche - Pinsort Package	660.00	.66
Filmstrip-audio Cassette Package	400.00	.40
Braille and Audio Cassette Package	200.00	.30
Computer Package		
On-line access (local telephone lines)	2925.00	2.92
On-line access (using 800 dial-up long distance line)	5287.50	5.29
Batch Processing	1000.00	1.00

line the total cost to serve 1,000 students was estimated to be $5,287.00 per school year or $5.29 per student. The cost of an unlimited time 800 dial-up line for Tennessee was $775.00 per month. Since Tennessee is divided into two time zones it was possible to use the 800 dial-up line in two zones of the state for 4 hours each during the normal school day. Thus, the line cost to serve 1,000 students was calculated at $387.50 per month (½ of $775.00), computer time at $125.00 per month and rental of teletype terminal with acoustical coupler at $75.00 per month.

As shown in Table 1, the total cost estimated for providing batch processing of the computerized information was $1000.00 or $1.00 per student. This process allowed each student to complete a questionnaire which was put into the computer by an operator for processing. Each student received a printout of job titles based on his or her answers to the questionnaire and was allowed a second attempt in which answers could be changed and/or more information could be requested.

In analyzing the cost figures presented in Table 1 direct comparisons should not be made among the approaches since only two of the approaches provided the same information. Only the secondary-postsecondary microfiche-pinsort package and the computer provide students similar amounts of information. The junior high materials provided information on occupations which was of a general nature intended for seventh, eighth and ninth grade students. The filmstrip-audio cassette package provided information on 84 job titles which was designed for slow learners. The braille and audio cassette package was designed to present information on 50 job titles of interest to students with sight impairments.

CHAPTER III

EVALUATION RESULTS

To assess the reactions of users to the different types of delivery approaches, information was obtained from teachers, counselors, students and others who used the materials or who supervised the use of the materials. In this chapter the results of users' reactions for the different delivery approaches are presented.

User Reactions to Junior High INFOE

The Junior High INFOE materials which consisted of guides, microfiche sets, overhead transparencies and pinsorts were field tested in approximately 100 junior high schools in Tennessee. In these schools a total of 60 teachers, 50 counselors and one librarian worked with students on the use of the materials. The results of reactions of these students, counselors, teachers and one librarian to the use of the materials will be presented in this section.

A 7-item questionnaire was administered during May, 1976, to all those responsible for supervising the use of the materials by students. In addition, a 5-item questionnaire was administered to a 10 percent random sample of the students who had used the materials. Each of the items on both questionnaires is stated and a summary of the answers given is presented in this section.

Teacher, Counselor and Librarian Reactions

Item 1: Please indicate the grade level and number of students under your supervision who used the Junior High INFOE materials:

a. 7th - No. of students _____
b. 8th - No. of students _____
c. 9th - No. of students _____

Of the approximate 16,000 junior high school students enrolled in the 100 junior high schools involved in the project, 8,044 students were exposed to the Junior High INFOE materials. The numbers of seventh, eighth and ninth grade students who used the materials were respectively 2,782, 2,578 and 2,684.

Item 2: Was the Guide to Junior High INFOE relevant to your classroom situation?

a. Yes
b. No (If no, why not?) _____

Ninety-six (93 percent) of those responding indicated the guide was relevant to their classroom situation. Seven answered the guide was not relevant and 7 gave no response. Of the ones responding "no" the main reason given was it was difficult to work the guide's learning activities into their classroom schedule.

Item 3: Did you find the reading level on the INFOE materials applicable to student needs?

a. Yes
b. No (If no, what reading level would you recommend?) _____

All respondents answered this item and 107 (96 percent) indicated the reading level was applicable while 4 (4 percent) indicated the reading level was too high for some of their students. No indication was given of a more appropriate reading level by those who thought the level was too high.

Item 4: How would you rate overall student reactions to the different types of INFOE materials? (Rate only those materials that you used.)

	Very Favorable	Favorable	Unfavorable	Very Unfavorable
a. Learning Activities in INFOE Guide	☐	☐	☐	☐
b. Overhead Transparencies on Career Clusters & Job Families	☐	☐	☐	☐
c. Job Titles on Microfiche	☐	☐	☐	☐
d. Vocational Programs on Microfiche	☐	☐	☐	☐
e. Pinsort	☐	☐	☐	☐

Please explain your responses briefly. _____

A summary of respondent answers to the above item is presented in Table 2 on page 18.

TABLE 2

TEACHER, COUNSELOR AND LIBRARIAN RATINGS OF OVERALL STUDENT REACTIONS TO THE JUNIOR HIGH MATERIALS

Ratings	Number of Responses by Material Type				
	Learning Activities	Overhead Transparencies	Job Description Microfiche	Vocational Microfiche	Pinsort
Very favorable	28	26	47	34	41
Favorable	65	61	48	47	33
Unfavorable	2	8	3	3	11
Very unfavorable	1	1	1	0	2
Did not use	15	15	12	27	24

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An analysis of Table 2 shows 28 respondents believed student reactions to the learning activities in the INFOE guide were very favorable. An additional 65 respondents believed student reactions to be favorable. Therefore, 93 (97 percent) of those who had used the materials rated the student reactions as favorable or very favorable, while only 3 (3 percent) indicated student reactions were unfavorable or very unfavorable. Fifteen respondents indicated they had not used the learning activities enough to rate student reactions to them.

An analysis of Table 2 indicated 26 respondents believed student reactions to the overhead transparencies on career clusters and job families were very favorable. An additional 61 respondents believed student reactions to be favorable. Therefore, 87 (91 percent) of those who used the materials rated student reactions as favorable or very favorable, while 9 (9 percent) indicated student reactions were unfavorable or very unfavorable. Fifteen respondents indicated they had not used the overhead transparencies enough to rate student reactions to them.

An analysis of Table 2 shows 47 respondents believed student reactions to the job descriptions on microfiche were very favorable. An additional 48 respondents believed student reactions to be favorable. Therefore, 95 (96 percent) of those who used the microfiche rated student reactions as favorable or very favorable, while 4 (4 percent) indicated student reactions were unfavorable or very unfavorable. Twelve respondents indicated they had not used the job description microfiche enough to rate student reactions to it.

An analysis of Table 2 indicates 34 respondents believed student reactions to the vocational program descriptions on microfiche were very favorable. An additional 47 respondents believed student reactions to be favorable. Therefore, 81 (96 percent) of those who had used the vocational microfiche rated student reactions as favorable or very favorable, while 3 (4 percent) indicated student reactions were unfavorable or very unfavorable. Twenty-seven respondents stated they had not used the vocational microfiche enough to rate students reactions to it.

An analysis of Table 2 shows 41 respondents believed student reactions to the pinsort to be very favorable while another 33 rated the pinsort as favorable. A total of 75 (85 percent) of those who had used the pinsort rated student reactions as favorable or very favorable, while 13 (15 percent) indicated student reactions were unfavorable or very unfavorable. Twenty-four respondents stated they had not used the pinsort enough to rate student reactions to it.

Respondents who wrote additional comments to item number four stated that students found the Junior High INFOE materials interesting, beneficial and enjoyable. Twelve respondents stated the pinsort was too time consuming and required too much supervision for its use. Six respondents commented the transparencies should be made more interesting and that color should be added.

Item 5: How would you rate student use of INFOE materials as compared to other career education materials?

a. Not as good
b. About the same
c. Better
d. Much better

Twenty-two respondents rated the INFOE materials as being much better than other career education materials while 40 rated them as being at least better. Twenty-two rated the INFOE materials as being about the same as other career education materials and 2 rated the INFOE materials as "not as good" as other career education materials. Twenty-five gave no response to this item. In summary, 62 (72 percent) believed the INFOE materials to be better, 22 (26 percent) rated them as the same while only 2 (2 percent) rated them as not as good as other materials.

Item 6: What limitations did you find in the Junior High INFOE materials? Explain briefly. _____

The majority of respondents indicated there were no major limitations to the Junior High INFOE materials. The few respondents who pointed out limitations listed the following limitations in the order given below.

1. Students expressed interest in additional job titles not now in the materials.
2. It was difficult for schools to buy enough microfiche readers to make the materials accessible to all students.
3. The materials were too individualized which made them time consuming to use with large numbers of students.
4. Teachers need more inservice training on how to use the materials effectively.

Item 7: What changes would you suggest to make the INFOE materials more effective for student use? Explain briefly.

_____

The majority of respondents indicated no changes were needed to make INFOE materials more effective for student use. The changes that were suggested are listed below in priority order.

1. Add more job titles.
2. Add more learning activities and provide a greater variety of learning activities.
3. Add additional materials to the Junior High INFOE kit such as filmstrips, slides, tapes and movies.

Student Reactions to Junior High INFOE

To assess junior high school student reactions to the INFOE materials, a five-item questionnaire was administered to a 10 percent randomly selected sample of the 8,044 students who had used the materials. Their responses to the questionnaire are presented in this section.

Item 1: My present grade level in school is: (check one)
- a. Seventh
- b. Eighth
- c. Ninth

A total of 832 students completed this item. A total of 277 of these students were seventh graders, 238 were eighth graders and 317 were ninth graders.

Item 2: How many times did you use the INFOE materials? (check one)
- a. Only once
- b. Twice
- c. Three times
- d. Several times

A total of 125 students had used the Junior High INFOE materials only once, 121 had used them twice, 89 had used them three times and 488 had used them several times. A total of 698 (85 percent) had used the materials at least twice. Nine students failed to respond to this item.

Item 3: Were the INFOE materials easy to read? (check one)
- a. Yes
- b. No (If no, explain why the materials were not easy to read.) _____

_____

A total of 809 (97 percent) students responded that the INFOE materials were easy to read. Only 21 (3 percent) indicated the materials were not easy to read. The majority of

those responding with "no" indicated their microfiche readers could not be focused properly. Only 3 students indicated the reading level as being too difficult for them.

Item 4: What were your reactions to the different types of INFOE materials? (Check one block for each type of material that you used.)

	Very Favorable	Favorable	Unfavorable	Very Unfavorable
a. Learning Activities in INFOE Guide	☐	☐	☐	☐
b. Overhead Transparencies on Career Clusters and Job Families	☐	☐	☐	☐
c. Job Titles on Microfiche	☐	☐	☐	☐
d. Vocational Programs on Microfiche	☐	☐	☐	☐
e. Pinsort	☐	☐	☐	☐

A summary of student answers to the above items is presented in Table 3 on page 23.

An analysis of Table 3 shows 207 students rated their reactions to learning activities in the INFOE guide as being very favorable. An additional 511 rated the activities as favorable. Therefore, 718 (97 percent) of those who used the learning activities rated their reactions to them as favorable or very favorable, while 26 (3 percent) indicated their reactions were unfavorable or very unfavorable. Eighty-eight students stated they had not used the learning activities.

An analysis of Table 3 indicates 231 students rated their reactions to the overhead transparencies as very favorable, while an additional 446 students checked a favorable reaction to the transparencies. Therefore, 677 (92 percent) of those who had been exposed to the transparencies rated their reactions to them as favorable or very favorable. Fifty-five students rated their reactions to the transparencies as unfavorable or very unfavorable. One hundred students indicated that they had not been exposed to the overhead transparencies.

TABLE 3

JUNIOR HIGH SCHOOL STUDENT RATINGS OF THEIR OVERALL REACTIONS TO DIFFERENT COMPONENTS OF THE JUNIOR HIGH INFOE MATERIALS

Ratings	Number of Responses by Material Type				
	Learning Activities	Overhead Transparencies	Job Description Microfiche	Vocational Microfiche	Pinsort
Very favorable	207	231	324	188	339
Favorable	511	446	403	424	281
Unfavorable	21	50	55	59	55
Very Unfavorable	5	5	7	11	15
Did not use	88	100	43	150	142

In Table 3 an analysis of student reactions to the job description microfiche shows 324 students reacted very favorably to the microfiche. An additional 403 students rated their reactions as being favorable. A total of 727 (92 percent) of those who used the microfiche rated their reactions to it as favorable or very favorable, while 62 (8 percent) rated their reactions as unfavorable or very unfavorable. Forty-three of the students stated they had not used the microfiche.

An analysis of student reactions to the microfiche describing the vocational programs shows 612 (91 percent) of those who had used the microfiche as reacting favorably or very favorably to it. As shown in Table 3, 188 students reacted very favorably to the microfiche and an additional 424 reacted favorably to it. Fifty-nine students reacted unfavorably to the microfiche while another 11 students reacted very unfavorably. A total of 150 students stated they had not used the microfiche which described the vocational programs.

An analysis of Table 3 shows 339 students reacted very favorably to the INFOE pinsort, while another 281 reacted favorably to it. A total of 620 (90 percent) reacted favorably or very favorably while 70 (10 percent) reacted unfavorably or very unfavorably. A total of 142 students stated they had not used the pinsort.

Item 5: Do you feel that changes should be made in the INFOE materials? (check one)

a. No
b. Yes (If yes, what changes should be made?) _____

_____

A total of 696 (85 percent) students indicated no changes were needed in the INFOE materials while 120 (15 percent) of the students believed some changes should be made. A total of 16 students did not complete this item. A summary of suggestions made by students is listed below in the order of priority identified by the students.

1. Add more job titles to materials.
2. Provide more detailed descriptions on jobs.
3. Provide a better index to the job descriptions on microfiche.
4. Provide more information on professional careers.
5. Make pinsort questionnaire more specific.

User Reactions to Secondary-Postsecondary INFOE

The Secondary-Postsecondary INFOE materials which consisted of guides, microfiche sets and pinsorts were field tested in 144 senior high schools and in 13 postsecondary institutions. At these field test sites a total of 253

counselors, teachers and librarians worked with students on the use of the materials. Approximately 10,000 students at the high school and postsecondary level used the materials.

A 7-item questionnaire was administered during May, 1976, to a 75 percent random sample of the 253 persons responsible for supervising student use of the materials. In addition, a 4-item questionnaire was administered to a 10 percent random sample of the students who had used the materials. Each of the items on both questionnaires is stated and a summary of the results is presented in this section.

Teacher, Counselor and Librarian Reactions

Item 1: Please indicate the number of students under your supervision who used the Secondary-Postsecondary INFOE materials:
_____ No. of students

Respondents indicated that of the 27,950 under their supervision, approximately 10,000 students actually used the materials during the duration of the field test. This fact indicated that approximately one-third of the students who had access to the materials actually used them.

Item 2: Was the Guide to Secondary-Postsecondary INFOE relevant to your classroom situation?
a. Yes b. No (If no, why not?)
_____

A total of 160 (84 percent) respondents believed the guide to be relevant to their classroom situation. Thirteen (16 percent) of the respondents answered the guide was not relevant, while 17 did not respond to this item. For those who responded "no", the major reason given was that a comprehensive alphabetical index to the job titles was needed since many students were not knowledgeable of the clustering techniques being used in the guide.

Item 3: Did you find the reading and/or vocabulary level of the INFOE materials applicable to student needs?
a. Yes b. No (If no, what reading and/or vocabulary level would you recommend?)

A total of 178 (96 percent) of those responding indicated the reading level was applicable to their students' needs. Eight respondents stated the reading level was too high for some of their students, but no suggestions for a different level were given. Four respondents did not complete this item.

Item 4: How would you rate student reactions to the different types of INFOE materials? (Rate only those materials you used.)

	Very Favorable	Favorable	Unfavorable	Very Unfavorable
a. Guide	☐	☐	☐	☐
b. Job Microfiche	☐	☐	☐	☐
c. Program Information	☐	☐	☐	☐
d. Institutional Information	☐	☐	☐	☐
e. Pinsort	☐	☐	☐	☐

Please explain your responses to item #4 briefly. _____

A summary of respondent answers to the above items is presented in Table 4 on page 27.

In Table 4 an analysis of respondent ratings of student reactions shows 47 and 116 respectively rated student reactions to the guide as being very favorable or favorable. Therefore, a total of 163 (95 percent) of those responding indicated reactions were at least favorable, while 9 (5 percent) of the respondents indicated student reactions were unfavorable or very unfavorable. Eighteen respondents indicated they had not used the guide enough with students to rate their reactions to it.

An analysis of respondents' ratings of student reactions to the job description microfiche shows 173 (99 percent) of the respondents who had used the microfiche believed student reactions to be favorable or very favorable. As shown in Table 4, 87 respondents indicated students reacted favorably and 86 rated student reactions as favorable. Only two respondents indicated student reactions were unfavorable. A total of 15 respondents indicated they had not used the microfiche enough with students to rate their reactions to it.

An analysis of Table 4 shows 35 respondents rated student reactions to the vocational-technical program information as very favorable and 94 rated reactions as favorable. A total of 130 (98 percent) rated student reactions as favorable or very favorable, while only 3 (2 percent) rated student reactions as unfavorable. A total of 57 respondents indicated they had not used the information enough to rate student reactions to it.

TABLE 4

TEACHER, COUNSELOR AND LIBRARIAN RATINGS OF OVERALL STUDENT REACTIONS TO THE SECONDARY-POSTSECONDARY INFOE MATERIALS

Ratings	Number of Responses by Material Type				
	INFOE Guide	Job Description Microfiche	Program Information	Institutional Information	Pinsort
Very favorable	47	87	36	31	61
Favorable	116	86	94	85	53
Unfavorable	7	2	3	2	20
Very Unfavorable	2	0	0	0	3
Did not use	18	15	57	72	53

An analysis of Table 4 indicates respondents rated student reactions to the postsecondary institutional information as very favorable, while 85 rated reactions as favorable. The total of 116 (98 percent) of the respondents who had used the information believed student reactions to be favorable or very favorable, while only 2 (2 percent) rated student reactions as unfavorable. Seventy-two respondents indicated they had not used the postsecondary institutional information.

An analysis of ratings given student reactions to the pinsort shows 61 respondents rated student reactions as very favorable and 53 rated student reactions as being favorable. A total of 114 (83 percent) of the respondents who used the materials rated student reactions as being at least favorable, while 23 (17 percent) rated student reactions as being unfavorable. Fifty-three of the respondents indicated they had not used the pinsort enough to rate student reactions to it.

Overall comments given by the respondents expressed the idea of the materials being concise, easy to read and being current. Negative comments given for low rating indicated that the pinsort was difficult to use and its use was too time consuming.

Item 5: How would you rate student use of INFOE materials as compared to other career educational materials?

a. Not as good
b. About the same
c. Better
d. Much better

Eighteen respondents did not complete this item. A total of 7 respondents rated the materials as being not as good as other career education materials. Another 28 respondents rated the materials as about the same as other materials. A rating of "better" was given by 71 respondents and 66 rated the INFOE materials as being much better than other educational materials. In summary, a total of 137 (80 percent) of the respondents believed the INFOE materials to be better than other career education materials, 28 (16 percent) believed them to be about the same, while only 7 (4 percent) believed them not to be as good as other materials.

Item 6: What limitations did you find in the Secondary-Postsecondary INFOE materials? Explain briefly. _____

The majority of respondents stated there were no major limitations to the materials. The few respondents who pointed out limitations listed the following limitations in the order given below.

1. Materials are too individualized and this makes them time consuming to use with large numbers of students.
2. The pinsort gives limited job opportunities as it is now structured.
3. The index for job titles is difficult to use.

Item 7: What changes would you suggest to make the INFOE materials more effective for student use? Explain briefly. _____

_____

The following changes were suggested by respondents as being ways to make the INFOE materials more effective.

1. Provide a composite alphabetical index to the job titles in addition to the listing given by job clusters.
2. Make pinsort questionnaire items more discriminatory.
3. Add more job titles and include more professional categories.

Student Reactions to Secondary-Postsecondary INFOE

A random sample of approximately 10 percent of the 10,000 students who had used the secondary-postsecondary materials completed a 4-item questionnaire assessing their reactions to the materials. In this section a summary of student responses for 1,039 students who completed these 4 items is presented.

Item 1: How many times did you use the INFOE materials? (check one)

a. Only once
b. Twice
c. Three times
d. Several times

A total of 334 students indicated they had used the INFOE materials only once. A total of 187 students used the materials twice, 94 used the materials three times and 360 used the materials several times. No response was given by 64 of the 1,039 students completing the questionnaire. In summary a total of 641 (66 percent) of those responding had used the materials twice or more while 334 (34 percent) used them at least once.

Item 2: Were the INFOE materials easy to read and/or understand? (check one)

a. Yes
b. No (If no, explain why the materials were not easy to read and/or understand.) _____

Of the 956 students who completed this item, 934 (98 percent) indicated the materials were easy to read and/or understand, while 22 (2 percent) stated they were not easy to read and/or understand. A total of 83 students did not respond to this item. The major explanation given for why the materials were difficult to read was pointed out as the limitation of the particular microfiche reader equipment being used and not the vocabulary.

Item 3: What were your reactions to the different types of INFOE materials? (Check one block for each type of material that you used.)

	Very Favorable	Favorable	Unfavorable	Very Unfavorable
a. INFOE Guide	☐	☐	☐	☐
b. Job Microfiche	☐	☐	☐	☐
c. Vocational-Technology Program Information	☐	☐	☐	☐
d. Postsecondary Institution Information	☐	☐	☐	☐
e. Pinsort	☐	☐	☐	☐

A summary of student ratings to the above items is presented in Table 5 on page 31.

An analysis of Table 5 shows 338 students rated their reactions to the INFOE guide as very favorable and 467 rated their reactions as favorable. A total of 805 (96 percent) of those responding rated their reactions as favorable or very favorable. A total of 35 (4 percent) of the students reacted unfavorably or very unfavorably to the guide. A total of 189 students indicated they had not used the guide.

TABLE 5

STUDENT RATINGS OF THEIR OVERALL REACTIONS TO THE DIFFERENT COMPONENTS OF THE SECONDARY-POSTSECONDARY MATERIALS

Ratings	Number of Responses by Material Type				
	INFOE Guide	Job Description Microfiche	Vocational Technology Program Information	Institutional Information	Pinsort
Very favorable	338	401	284	209	218
Favorable	467	441	395	358	397
Unfavorable	28	52	46	57	90
Very unfavorable	7	5	15	9	20
Did not use	189	140	299	416	314

An analysis of student ratings in Table 5 shows students' reactions to the job description microfiche were very favorable for 401 students and favorable for 441 students. Therefore, 842 (94 percent) of the students reacted as being at least favorable to the microfiche while 57 (6 percent) rated the microfiche as unfavorable or very unfavorable. Of the 1,039 students sampled 140 students indicated they had not used the job description microfiche.

An analysis of Table 5 shows 284 students rated their reactions to the vocational-technical program information as very favorable and 395 rated their reactions as favorable. A total of 679 (92 percent) of the students who had used the information rated their reactions as favorable or very favorable while 61 (8 percent) rated their reactions to the program information as unfavorable or very unfavorable. A total of 299 students of the students sampled had not used the vocational-technical program information.

An analysis of Table 5 indicated 209 students rated their reactions to the postsecondary institutional information as very favorable and 358 students rated their reactions as favorable. Ninety percent or 567 of the students who had used the information rated their reactions as favorable or very favorable, while 66 (10 percent) rated their reactions as unfavorable or very unfavorable. A total of 416 of the 1,039 students sampled had not used the postsecondary institutional information. It should be pointed out that the low usage of the materials was due to it being on microfilm aperture cards which made cross indexing of it with the microfiche somewhat difficult.

An analysis of Table 5 shows 218 students rated their reaction to the pinsort as very favorable and 397 students rated the pinsort as favorable. A total of 615 (85 percent) rated their reactions to the pinsort as being at least favorable, while 110 (15 percent) who used the pinsort rated their reactions as being unfavorable or very unfavorable. A total of 314 of the 1,039 students sampled had not used the pinsort.

In explaining their reactions in terms of why they rated the different components the way they did, students made the following positive comments.

1. The INFOE materials were very helpful in presenting job and salary information.
2. The INFOE materials were easy to understand and were easy to use.
3. The INFOE materials were interesting and informative.

Negative responses were centered mainly around reactions

to the pinsort. Several students stated they had problems using the pinsort and explained the results obtained from the pinsort were not very useful.

Item 4: Do you feel that changes should be made in the INFOE materials? (check one)

a. No
b. Yes (If yes, what changes should be made?) _____

_____

A total of 656 (76 percent) of the students responding to this item indicated no changes were needed in the INFOE materials. Changes were recommended by 205 (24 percent) of the 861 students who responded to this item. A total of 178 students did not complete this item.

Suggestions made by students for changing the INFOE materials in the order of frequency listed are presented below.

1. Provide more detailed information on jobs, especially local job opportunities.
2. Increase the number of job titles and include more professional job titles.
3. Pinsort questionnaire should be more specific.
4. Include more information on postsecondary institutions.
5. Provide an index to job titles which is easier to use.

User Reactions to Computerized INFOE

Computerized INFOE which consisted of user guides and teletype terminal hookup to a 2000F Hewlett-Packard computer was field tested in 8 high schools and 2 postsecondary institutions. Approximately 1400 students used the computerized version during the field test period of November, 1975, through May, 1976. A total of eleven counselors or librarians supervised student use of the computerized version.

The ratings counselors and librarians gave to indicate student reactions to Computerized INFOE are presented in Table 6.

Five of the 11 counselors and librarians rated student reactions as very favorable to Computerized INFOE and an additional 4 rated student reactions as favorable. Only 2 of the users rated student reactions as unfavorable. A total of 9 (82 percent) counselors and librarians rated student reactions as being at least favorable.

TABLE 6

COUNSELOR AND LIBRARIAN RATINGS OF
STUDENT REACTIONS TO COMPUTERIZED INFOE

Ratings	Frequency of Responses
Very favorable	5
Favorable	4
Unfavorable	2
Very unfavorable	0

Comments made by users were as follows:

1. Students responded very positively to the computerized version when the program was working properly.
2. Some mechanical problems were experienced with the teletype terminal which limited student use of Computerized INFOE at times.
3. Student response would have been better if all technical problems with the computer program had been solved before they used the program.

Reactions of a 10 percent sample (140) students) of the 1400 students who used Computerized INFOE are presented in Table 7.

TABLE 7

RATINGS OF STUDENT REACTIONS
TO COMPUTERIZED INFOE

Ratings	Frequency of Student Response
Very favorable	74
Favorable	63
Unfavorable	1
Very unfavorable	2

A total of 74 of the 140 students sampled rated their reactions to Computerized INFOE as very favorable. Another 63 rated their reactions as favorable. In summary, 137 (98 percent) of the students rated their reactions as being at least favorable, while 3 (2 percent) rated their reactions as unfavorable or very unfavorable.

Examples of comments made by students regarding their reactions to Computerized INFOE are presented below:

1. It was interesting to use and it provided information very quickly.
2. It was helpful in exploring information about jobs which was very informative.
3. It was not working properly when I used it.
4. It did not list any jobs in which I was really interested.

In addition to the on-line access to Computerized INFOE, some batch processing of the information was field tested. For batch processing the students were asked to complete a 24-item job attribute questionnaire and their answers were processed by the project staff. One day later the students were given a computer printout of the results. It was found that batch processing could serve more students but it did not provide for personal interaction with the computer as the on-line access did.

It was found that batch processing coupled with a demonstration of the teletype terminal could be used to serve more students but students did not find this method as interesting as actually accessing the information individually. Therefore, based on student reactions, batch processing was not as effective as on-line access of Computerized INFOE.

User Reactions to the INFOE Filmstrip Series

The INFOE filmstrip series designed for slow learners consisted of a user guide and 15 filmstrips with accompanying audio tapes. The filmstrip series package was field tested in 28 high schools with 500 students and 28 teachers and counselors. The field test period lasted for 3 months, March, 1976, through May, 1976.

The ratings given student reactions to the filmstrips and audio tapes by the teachers and counselors who used the materials are presented in Table 8.

An analysis of Table 8 shows 10 respondents rated student reactions to the filmstrips as very favorable, while 14 rated student reactions as favorable. A total of 24 (86 percent) rated student reactions as being at least favorable, while 4 (14 percent) of the respondents rated student reactions as unfavorable or very unfavorable.

TABLE 8

COUNSELOR AND TEACHER RATINGS OF STUDENT REACTIONS TO THE INFOE FILMSTRIP SERIES

Ratings	Frequency of Responses to Filmstrips and Tapes	
	Filmstrips	Audio Tapes
Very favorable	10	6
Favorable	14	16
Unfavorable	2	3
Very unfavorable	2	3

An analysis of Table 8 shows 6 respondents rated student reactions to the audio tapes accompanying the filmstrips as very favorable, while 16 rated student reactions as favorable. A total of 22 (79 percent) of the counselors and teachers who used the materials rated student reactions as being at least favorable, while 6 (21 percent) of the respondents rated student reactions as unfavorable or very unfavorable.

In order to obtain additional information of the strengths and weaknesses of the filmstrip materials, in depth interviews were conducted with the twenty-eight teachers and counselors who worked with students who used the filmstrip series. The results of these interviews are presented in the five general categories of comments received.

Teachers and counselors during the interviews were asked to elaborate on the overall reactions students had toward the filmstrip materials. Examples of responses made by those interviewed are presented below:

1. "As a whole, the students seemed to enjoy the filmstrips and felt they were worthwhile. They said several careers were suggested to them that they had not considered before."
2. "Good to very good. The work situations were realistic and directly applied to needs and interests of my students."

3. "Some students did not like the audio tapes but all reacted favorably to the actual filmstrips."
4. "Students enjoyed completing the exercises given in the guide."

When asked about the audio tape sound tracks accompanying the filmstrips, teachers and counselors made the following comments.

1. "The audio portion was spoken too slowly and in somewhat of a monotone. The vocabulary was pretty well suited to the level of my students."
2. "I noticed the audio portion was too slow for some average students who saw one of the films, but the special education students didn't seem to feel this way."
3. "Even though our students are functioning below average academically, I feel that there is a little too much repetition on the tapes."

When asked about the quality of the photography and realistic portrayal of workers in the filmstrips, the teachers and counselors made the following comments.

1. "The quality was good and the job areas were very relevant to our students."
2. "The visual portion of the filmstrips was very good. The workers and their jobs were portrayed realistically."
3. "Some things portrayed were too elementary. More depth is needed."

With respect to improvements needed in the user's guide, most teachers and counselors stated they could not think of any. The only suggestion given was that additional student activities could be added to make the guide more comprehensive.

When asked what overall improvements could be made in the total filmstrip/audio tape series the following comments were made by counselors and teachers who had used the series.

1. "Redo the tapes, using more than one narrator and speed up the speech."
2. "Add a workbook for individual student use. This would help reinforce student learning and be easier to use than the activities given in the guide."
3. "If the audio portion was improved, I feel the filmstrips would serve their purpose very well."

A random sample of 10 students from each school were asked to rate their reactions to the filmstrip series. Of the approximate 500 students who had used the materials responses were received from 288 students. Their ratings of the filmstrips and audio tapes are presented in Table 9.

TABLE 9

STUDENT RATINGS OF THEIR REACTIONS TO THE INFOE FILMSTRIP SERIES

Ratings	Frequency of Responses to Filmstrips and Tapes	
	Filmstrips	Audio Tapes
Very favorable	128	89
Favorable	114	103
Unfavorable	23	49
Very unfavorable	14	22
Did not respond	9	25

An analysis of Table 9 shows 128 students rated their reactions to the filmstrips as very favorable, while 114 rated their reactions as favorable. A total of 242 (87 percent) of the 279 students responding to this item rated their reactions as being at least favorable, while 37 (13 percent) rated their reactions as unfavorable or very unfavorable. Nine students did not respond.

As shown in Table 9, 89 students rated their reactions to the audio tapes accompanying the filmstrips as very favorable, while 103 rated their reactions as favorable. A total of 192 (73 percent) of the 263 students responding to this item rated their reactions as being at least favorable, while 71 (27 percent) rated their reactions as unfavorable. A total of 25 students did not respond.

In responding to why they rated the filmstrips series as they did students commented as follows:

1. The activities and filmstrips were interesting and helpful.
2. The narrator spoke too slowly on the audio recordings and some of the music on the audio tapes was distracting.

User Reactions to the INFOE Materials for the Blind

The INFOE materials for the blind consist of information on 50 job titles reproduced in the form of audio tapes and braille. During the field test of these materials approximately 80 students used them in the 4 public schools and 2 agencies for the blind which used them.

A 25 percent random sample of the 80 students who used the materials was asked to respond to 3 questions regarding the blind materials. The results of the 20 students who participated in the interviews for the 3 questions are presented in this section.

When asked how many times the INFOE materials for the blind had been used, 13 students replied they had used the materials only once. One had used the materials 3 times and 6 students had used the materials more than 3 times. In summary, 35 percent of the students had used the materials three times or more, while 65 percent had used the materials only once.

When students were asked if the materials were helpful to them, all 20 replied they were. They stated that the audio cassettes were more helpful to them because reading the braille was too slow.

When asked to rate the audio cassettes and braille as very favorable, favorable, unfavorable, or very unfavorable, 14 students stated they reacted very favorably to the audio cassettes and 6 rated their reactions as favorable. No students rated the audio cassettes as unfavorable. Only 3 students had used the braille at the same time they used the audio cassettes. These 3 students reacted favorably to the braille, but stated they preferred to use either the audio cassettes alone or the cassettes with the braille as backup reference.

In addition to student reactions, comments were solicited from the teachers and counselors who had supervised student use of the materials. Some selected comments made by teachers and counselors are presented below.

1. "Several of my students have found these tapes interesting and very beneficial. I feel that this program has been good for these students and it gives them a wide range of ideas for occupations they could consider for themselves as they get older. I think that directing visually handicapped students toward a vocational program is important in many cases. Also, this program

helps to show students that they are not limited to the menial jobs that are so often expected of the handicapped."

2. "The materials consisted of fine recordings of a well prepared list of jobs. The tapes represent one of the better things I've run across in this area."
3. "I believe the students get more information by just listening to the tapes; reading braille takes too much concentration."

Parent Reactions to the Different Approaches for Providing Career Information

A 4-item parent reaction questionnaire was mailed to a selected sample of 500 parents of students who had used various forms of the INFOE materials. Usable questionnaires were received from 84 parents. The results of their responses are presented in this section.

Parents were asked in the first item to indicate whether or not high schools and colleges should provide career information to students. All 84 parents replied that schools and colleges should provide such information.

In the second item parents were asked if their children had discussed any of the career information they used with them. A total of 48 (57 percent) of the parents who replied stated their children had discussed the INFOE materials with them. A total of 36 (43 percent) stated their children who used the INFOE material had not discussed the materials with them.

In the third item in the questionnaire, parents were asked how often their children had talked with them about any type of career information. Three of the parents stated their students had never discussed career information with them. Seventeen parents replied their children seldom talked about careers with them, while a total of 64 (76 percent) stated their children had talked about careers with them several times.

Parents were asked to rate the different approaches for providing career information as favorable or unfavorable. The results of their ratings are presented in Table 10 on page 41.

In Table 10 an analysis of parent reactions to printed materials on careers such as guides and books shows 34 parents rated printed materials as being very favorable. An additional 46 parents rated their reactions as being favorable. A total of 80 (95 percent) of the parents rated their reactions to the printed materials as being at least favorable while 3 (4 percent) rated them as unfavorable. One respondent indicated not enough was known about that type of materials to rate them.

TABLE 10

PARENT RATINGS OF DIFFERENT APPROACHES FOR PROVIDING CAREER INFORMATION TO STUDENTS

Ratings	Frequency of Responses to the Approaches						
	Printed Materials Books, etc.	Microfiche	Pinsort	Computers	Film-strips	Audio Tape	Braille for the Blind
Do not know	1	20	27	20	7	9	12
Very favorable	34	33	19	30	36	27	58
Favorable	46	28	30	26	38	38	14
Unfavorable	1	2	6	5	2	8	0
Very unfavorable	2	1	2	3	1	2	0

An analysis of parent reactions to the microfiche shows a total of 61 (73 percent) of the parents rated the microfiche as being at least favorable. As shown in Table 10, 33 parents rated the microfiche as very favorable and 28 rated it as favorable. Three (3 percent) of the parents rated the microfiche as an unfavorable approach to use. Twenty (24 percent) parents said they did not know enough about microfiche to rate it.

An analysis of Table 10 shows 19 parents rated the pinsort as being a very favorable approach to use in providing career information and 30 rated it as a favorable approach. A total of 49 (58 percent) of the parents rated the pinsort as being at least favorable, while 8 (10 percent) rated it as unfavorable or very unfavorable. A total of 27 (32 percent) of the parents indicated they did not know enough about the pinsort to rate it.

In Table 10 an analysis of parent reactions to the computer access approach shows 30 parents rated it as very favorable, while an additional 26 rated it as very favorable. A total of 56 (67 percent) of the parents rated the computer access approach as being at least favorable, while 8 (9 percent) rated it as an unfavorable or very unfavorable approach. A total of 20 (24 percent) of the parents indicated they did not know enough about the computer approach to rate it.

An analysis of Table 10 shows 36 parents rated filmstrips as a very favorable approach to use in providing career information and an additional 38 rated filmstrips as being favorable. A total of 74 (88 percent) of the parents rated filmstrips as being at least a favorable approach while 3 (4 percent) rated filmstrips as unfavorable or very unfavorable. Seven (8 percent) stated they did not know enough about filmstrips to rate them.

An analysis of Table 10 shows 27 parents rated the audio tapes as being a very favorable approach for providing career information and 38 rated tapes as a favorable approach. A total of 65 (77 percent) of the parents rated the audio tapes as being at least favorable while 10 (12 percent) rated them as being unfavorable or very unfavorable. A total of 9 parents indicated they did not know enough about the audio tape approach to rate it.

As shown in Table 10, 58 parents rated braille as a very favorable approach for presenting careers to the blind. An additional 14 parents rated braille as favorable. A total of 72 (86 percent) rated braille as being at least favorable, while none rated this approach as being unfavorable. Twelve (14 percent) stated they did not know enough about braille to rate an approach which used braille.

CHAPTER IV

SUMMARY OF FINDINGS

In this chapter a summary of the findings for the use of each delivery approach is presented. In addition, some overall findings derived from observations made by the project staff are presented.

Findings Related to the Junior High Materials

Teachers, counselors and librarians who supervised student use of the junior high materials reacted in the following ways.

1. Ninety-three percent stated the junior high guide was relevant to their classroom situation, while 7 percent stated it was not.

2. Ninety-six percent stated the reading level of the junior high materials was applicable to their students, while 4 percent stated the reading level was too difficult for some junior high students.

3. Ninety-seven percent stated student reactions to the learning activities were favorable or very favorable.

4. Ninety-one percent stated student reactions to the overhead transparencies were favorable or very favorable.

5. Ninety-six percent stated student reactions to the occupational and vocational information on microfiche were favorable or very favorable.

6. Eighty-five percent stated student reactions to the use of the pinsort exploratory kit were favorable or very favorable.

7. Seventy-two percent stated overall student use of the junior high materials was better than student use of other similar materials and

26 percent stated student use was as good as that of any other materials.

Students who used the junior high materials responded in the following manner.

1. Eighty-five percent of the students had used the materials at least twice during the project period, while 15 percent had used the materials only once.

2. Ninety-five percent of the students stated they had no problem reading the materials.

3. Ninety-seven percent of the students reacted favorably or very favorably to the learning activities provided in the materials.

4. Ninety-two percent of the students reacted favorably or very favorably to the overhead transparencies on job families and career clusters.

5. Ninety-two percent of the students rated their reactions as at least favorable to the occupational information on microfiche and 91 percent reacted favorably to the vocational program information which was presented on microfiche.

6. Ninety percent of the junior high students who used the pinsort rated their reaction to it as favorable or very favorable.

7. Eighty-five percent of the students recommended no changes be made in the junior high materials while the 15 percent who suggested changes stated more job titles should be added and the pinsort should be structured around more specific questions.

Findings Related to the Secondary-Postsecondary Materials

Teachers, counselors and librarians who supervised student use of the secondary-postsecondary materials responded in the following manner.

1. Eighty-five percent stated the guide provided with the materials was relevant to their teaching situation.

2. Ninety-six percent stated the reading level was applicable for their students.

3. Ninety-five percent stated student reactions to the guide were favorable or very favorable.

4. Ninety-nine percent stated student reactions to the occupational information on microfiche were favorable and 98 percent stated reactions were favorable to the vocational-technical and post-secondary institution information.

5. Eighty-three percent stated student reactions to the pinsort were favorable.

6. Eighty-four percent stated student use of the secondary-postsecondary materials was better than for other similar materials and 16 percent stated student use was about the same as with other materials.

7. The majority of those responding pointed out no limitations of the materials; however, the few who did find limitations stated the materials required too much individual use and that a better job index was needed as well as more discriminatory codes for the pinsort.

Students who used the secondary-postsecondary materials responded as follows.

1. Sixty-six percent of the students sampled had used the materials twice or more, while 34 percent had used the materials only once.

2. Ninety-eight percent of the students stated the materials were easy to use and understand.

3. Ninety-five percent of the students reacted favorably or very favorably to

the guide which provided directions for using the secondary-postsecondary materials.

4. Ninety-four percent of the students rated their reactions to occupational information presented on microfiche as being favorable.

5. Ninety-two percent of the students rated the vocational-technical information as being favorable and 90 percent rated the information on postsecondary institutions as being favorable.

6. Eighty-five percent of the students who used the pinsort rated their reactions to it as favorable or very favorable.

7. Seventy-six percent of the students indicated no changes were needed in the secondary-postsecondary materials while 24 percent stated a better index was needed and the pinsort should be revised to provide more specific information.

Findings Related to the Computerized Delivery Approach

Although many technical problems were experienced with the computer software package developed by the University of Oregon, the computerized version was well accepted by students. The major reactions of counselors, librarians and students were as follows.

1. Eighty-two percent of the counselors and librarians who supervised student use of the computerized version stated students reacted favorably or very favorably to it. Eighteen percent stated the technical problems with the computer program limited their use of the computer version.

2. Ninety-eight percent of the students who used the computerized version stated their reactions were favorable. They further stated they found the use of the computer interesting and liked the feature of receiving information instantly.

3. Batch processing for accessing occupational information was found to be an economical approach but it was not as effective as direct on-line access in which the student could interact with the computer.

Findings Related to INFOE Filmstrip Series

Reactions of counselors, teachers and students to the filmstrip series were as follows.

1. Eighty-six percent of the counselors and teachers who supervised student use of the filmstrip series rated student reactions to the actual filmstrips as favorable.

2. Seventy-nine percent of the counselors and teachers stated student reactions to the cassette tapes were favorable. Twenty-one percent stated the narration needed to be improved.

3. The majority of teachers and counselors stated the guide to the filmstrip series was very good. It was suggested that additional student activities might be added to the guide.

4. Eighty-seven percent of the students who used the filmstrip series rated their reactions to the filmstrips as favorable.

5. Seventy-three percent of the students who used the filmstrip series rated their reactions to the audio cassettes as favorable. The 27 percent who rated the cassettes as unfavorable stated the narrator spoke too slowly and some of the music was distracting.

Findings Related to the INFOE Materials for the Blind

The braille and audio cassette materials prepared for the blind were well received by teachers and counselors for the blind and by students with sight impairments. All of the students sampled rated their reactions to the audio-

cassettes as favorable. Only a small percentage of the students used the braille because they believed reading it was too slow. Some students stated they preferred to listen to the audio recordings and use the braille as an occasional reference.

Findings Related to Parent Reactions to the Different Approaches

A summary of findings relating to parent reactions is as follows.

1. All parents responding stated that schools and colleges should provide career information to students.

2. Fifty-seven percent of the parents stated their children had discussed their use of the INFOE materials with them. A total of 43 percent stated their children who had used the INFOE materials had not discussed the materials with them.

3. Seventy-six percent of the parents who completed the parent questionnaire stated their children had talked about careers with them several times.

4. Ninety-five percent of the parents rated printed materials as a favorable approach for presenting career information.

5. Seventy-three percent of the parents rated microfiche as a favorable approach for presenting career information.

6. Fifty-eight percent of the parents rated the pinsort as a favorable approach for presenting career information. Thirty-two percent said they did not know enough about the pinsort to rate it.

7. Sixty-seven percent of the parents rated the computer as a favorable approach to presenting career information. Twenty-four percent indicated they did not know enough about the computer approach to rate it.

8. Eighty-eight percent of the parents rated filmstrips as a favorable approach for presenting career information.

9. Seventy-seven percent of the parents rated audio tapes as a favorable approach for presenting career information.

10. Eighty-six percent of the parents rated braille as being a favorable approach for presenting career information to blind students.

Findings Related to Observations of Project Staff

The following are some findings compiled from observations made by project staff.

1. The majority of counselors, teachers and librarians who supervised student use of the materials expressed a desire at the end of the project for more inservice training on use of the various delivery approaches.

2. Many users felt overwhelmed with materials during the relatively short period of the field test phase.

3. The users felt the technical problems encountered with the computer program from the University of Oregon limited the effectiveness of the computerized approach.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

In this chapter the conclusions based on the findings of the project are given. In addition, recommendations for improving and applying the delivery approaches for providing occupational information are presented.

Conclusions

The following conclusions were drawn from the findings of the study.

1. The junior high microfiche-pinsort package provided a viable means for presenting general occupational information which was accepted favorably by junior high school students, teachers and counselors.

2. The secondary-postsecondary microfiche-pinsort package provided a viable means for presenting specific occupational information which was accepted favorably by students, teachers, librarians and counselors.

3. The computerized delivery system was accepted favorably by students, librarians and counselors as an effective counseling tool, although some technical problems were experienced with its use.

4. The computerized approach using on-line access was more effective than batch processing since on-line access provided for student-computer interaction.

5. The INFOE filmstrip package was accepted favorably by students, teachers and counselors as a means for presenting occupational information to slow learners.

6. The audio cassette materials developed for students with sight impairments was accepted favorably by students, counselors and teachers while the braille materials were judged as having limited use with blind students.

7. Parents of students who used the various delivery approaches believed strongly that schools and colleges should provide career information to students.

8. Students involved in this project discussed career information frequently with their parents.

9. Parents reacted favorably to all types of delivery approaches used in this project but were less knowledgeable about the approaches using microfiche, pinsorts and computers than those using audio cassettes, filmstrips and printed materials.

10. In order to serve effectively different user groups, it was discovered that a variety of occupational information delivery approaches is needed.

11. More initial inservice training as well as follow-up inservice training was needed to orient teachers, counselors and librarians to effective use of the various delivery approaches for providing occupational information.

Recommendations

Based on the conclusions of this project, the following recommendations are presented.

1. The present junior high microfiche-pinsort package should be expanded, refined and disseminated to every junior high school in Tennessee.

2. The present secondary-postsecondary microfiche-pinsort package should be expanded and refinements should be made in the pinsort before it is disseminated to all secondary and two-year postsecondary schools in Tennessee.

3. The computerized occupational information package from the University of Oregon should be further field tested to eliminate all technical problems before it is made available for student use.

4. The computerized approach using on-line access by individual students should be used rather than batch processing of the computerized information. Batch processing should only be used in cases where immediate individual counseling can be pursued.

5. The INFOE filmstrip package should be refined, expanded and disseminated throughout the state for use with slow learners.

6. The audio cassette materials should be expanded to include more job titles applicable to the blind and should be made available throughout Tennessee for use by students with sight impairments.

7. The development of braille materials for the blind should be discontinued.

8. Parents should be kept informed of the various types of occupational information made available to their children and should be utilized in making their children aware of the occupational information materials which are available.

9. States wishing to develop a comprehensive occupational information system should consider adapting the delivery approaches used in this project to meet their needs.

10. Inservice training should be pursued continuously with users of the various types of occupational information delivery approaches.

BIBLIOGRAPHY

Bice, Garry, et al. Career Education and the School Counselor in Tennessee. Final Report. Tennessee Research Coordinating Unit, The University of Tennessee, Knoxville, Tennessee, April 1973.

Boocock, S. S. "The Life Career Game," Personnel and Guidance Journal. Vol. 46, 1967.

Cameron, Walter A. Elementary INFOE Report. Knoxville, Tennessee Research Coordinating Unit, 1974.

Cameron, Walter A. Final Report, Phase I--Project INFOE. Knoxville, Tennessee, Research Coordinating Unit, 1972.

Campbell, R. E. and Louise Vetter. Career Guidance - An Overview of Alternative Approaches. Information Series No. 45, The Center for Vocational Education, Columbus, Ohio, 1971.

Campbell, R. E., et al. Vocational Guidance in Secondary Education: The Results of A National Survey. The Center for Vocational and Technical Education, The Ohio State University, Columbus, Ohio, 1968.

Cocswell, J. F. Exploratory Study of Information - Processing Procedures and Computer-Band Technology in Vocational Counseling. Systems Development Corporation, Santa Monica, California, 1967, Project #5-9141, VT. 991-328.

Eggeman, Donald F., et al. Problems in the Transition from School to Work as Perceived by Youth Opportunity Centers Counselors. A National Survey, Research Series No. 53, The Center for Vocational and Technical Education, December, 1969.

Flanagan, J. C. "The Role of the Computer in PLAN," Journal of Educational Data Processing. 1970, pp. 1-10.

Guzzardi, Jr., Walter. "Education for the World of Work." Fortune, October, 1975, pp. 124-128.

Hansen, L. S. "Theory Into Practice: A Practitioner Looks at Career Guidance in the School Curriculum," Vocational Guidance Quarterly. Vol. 16, 1967.

Harris, Joann. Summary of a Project for Computerized Vocational Information Being Developed at Willowbrook High School. Villa Park, Illinois, Willowbrook High School, Villa Park, Illinois, 1967.

Harris, Wayne M. A Proposed Model for an Information Storage and Retrieval System for Reporting Job Placement Follow Through Data of Persons Trained in Industrial Education Programs in California Public Schools. California State Department of Education, Sacramento, California, June 1967.

Holland, John L. A Guide to the Self-Directed Career Program: A Practical and Inexpensive Vocational Guidance System. Report No. 126, Johns Hopkins University, Baltimore, Maryland, March, 1972.

Holt, K. B. Statement before House General Subcommittee on Education. Guidepost. American Personnel and Guidance Association, Washington, D.C., June, 1968.

Jones, Brian G., et al. Development and Evaluation of a Comprehensive Career Guidance System. Final Report. American Institute for Research in the Behavioral Sciences, Palo Alto, California, January, 1971.

Krumboltz, J. D., et al. Vocational Problem-Solving Experiences for Stimulating Career Exploration and Interest: Phase II. Final Report. School of Education, Stanford University, Stanford, California, 1968. (ED. 015 517)

Law, Gordon F. Vocational Education In Service-Vocational Guidance. American Vocational Association, Report No. BR-7-0633, Washington, D.C., March, 1968.

McKinley, Bruce. Developing a Career Information System, Eugene, Oregon: University of Oregon, October, 1974.

Minor, F. J., R. A. Myers, and D. E. Super. "An Experimental Computer-Based Educational and Career Exploration System," Personnel and Guidance Journal, Vol. 47, 1967.

Super, D. E., ed. Computer-Assisted Counseling. Teachers College, Columbia University, New York, New York, 1970.

Suzuki, Warren. "Administering Career Guidance Programs," Paper presented at Sixth Annual National Leadership Development Seminar for State Directors of Vocational Education. Nashville, Tennessee, September, 1973.

Tiedeman, D. V. and F. C. Field. "Guidance: The Science of Purposeful Action Applied through Education," Harvard Educational Review, 1962.

U.S. Department of Labor. Occupational Information Systems Grants Program Standards and Guidelines. Washington, D.C., Government Printing Office, 1974.

APPENDIX A

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APPENDIX B

JUNIOR HIGH INFOE PINSORT DIRECTIONS
FOR STUDENTS

The Junior High INFOE pinsort is a system which has been developed to help you find job titles which relate to your interests and abilities. By answering the questions below you will be able to sort for jobs which fit your interests.

Numbers 1 through 15 on the pinsort cards represent the 15 clusters. The pinsort cards do not need to remain in any set order. If you wish you may sort a pinsort deck for all the cards in one cluster rather than answering questions 16-42 to sort for your interests. To do this, line the cards up with numbers 1-22 on the top edge facing you and run the sorter through the hole with the number which matches the cluster number you want. (*Note: Seventh grade will only sort for clusters 1-7, eighth grade only for clusters 8-15 and ninth grade for all clusters.) The cards which fall out will be the cluster you have sorted for.

To sort for a variety of job titles related to your interests, answer the following questions and follow the directions in Steps 1 and 2.

PINSORT QUESTIONNAIRE

Step 1: (For questions 16-42)

Read each of the following questions or statements and then circle the numbers in front of the responses that best fit you, your abilities, interests or plans. After you have read each question there are further instructions in Step 2.

SECTION I

Select only one answer from numbers 16-20.
HOW MUCH EDUCATION DO YOU PLAN TO COMPLETE BEFORE LOOKING FOR A FULL-TIME JOB?

16. I will not finish high school

17. I will finish high school

18. I would be willing to take as much as two years special training after high school

19. I will graduate from college

20. I would be willing to take any amount of schooling or special training including graduate school training

SECTION II

Select only one answer from numbers 21-22
WHICH TYPE OF WORKING CONDITIONS WOULD YOU PREFER?

I would prefer work that is mostly:

22. Outside

23. Inside or inside at a desk

SECTION III

PEOPLE CAN USUALLY DO SOMETHING BEST IF THEY ENJOY DOING IT. SELECT FROM NUMBERS 23-30 THE THINGS YOU WOULD LIKE BEST ABOUT A JOB. DO NOT CONTRADICT YOURSELF - FOR EXAMPLE, DO NOT CIRCLE WORKING ALONE AND HELPING OTHER PEOPLE. (*Note: When sorting turn deck over for numbers 23-42.)

I would like for my job to involve:

23. Selling things or showing people my point of view

24. Working alone or working without other people around

25. Helping, advising or assisting other people

26. Using facts and information to solve problems or develop ideas and products

27. Organizing and using data (this could involve gathering information and putting it together in jobs like construction, laboratory work and some office jobs)

28. Copying, sorting, and putting things together (this could involve typing, copying, or following step-by-step plans to make things)

29. Using machines or equipment

30. Detailed or precision work (jobs in mechanics, metal work, repair work, drafting, sewing and some building trades)

SECTION IV

Select only one answer from numbers 31-42
WHAT JOBS ARE RELATED TO THE COURSES I TAKE IN SCHOOL?

Circle a subject area if you would like to see jobs which are related to it (for example, if you want to see what jobs are related to an English class, circle 31, etc.).

31. Language Arts (English)

32. Mathematics

33. Natural Science

34. Social Studies

35. Distributive Education

36. Office Occupations

37. Consumer and Homemaking Education (Occupational Home Economics)

38. Industrial Education (Trade and Industry)

39. Vocational Agriculture

40. Health and Physical Education

41. Art or Music

42. Foreign Language

Step 2:

Now that you have answered these questions you can use your answers to start sorting for job titles to explore. (Note: Ninth graders will need to complete two sorts; once for the first seven clusters and once for the remaining eight clusters.)

To begin sorting for Section I place the deck of cards so you can see the numbers 1-22 in the upper right hand corner of the deck. Take the sorter and run it through the hole which is numbered the same as the first answer you have selected. The cards which fall out of the deck are the cards which you will use for the remainder of your sorting.

***THE KEY TO USING THE PINSORT IS REMEMBERING AFTER EACH SORT TO USE ONLY THE CARDS WHICH FALL OUT OF THE DECK.

After you have made your first sort take off the cards that remain on your sorter and set them aside immediately (you use only the cards which fall out for your next sorts). You may feel you will be over qualified for some of the jobs which fall out after this first sort. The key here is to remember you may be over qualified for some of these jobs, but by getting more schooling you have increased your possiblities.

To sort for Sections II, III, and IV pick up the cards that have fallen out of the deck and line them up so that the cards are all going in the same direction. For numbers 23-42 you will need to turn the cards over to sort. Continue sorting for Sections II, III, and IV by using the numbers next to the answers you have selected.

*REMEMBER -- USE ONLY THOSE CARDS WHICH DROP OUT OF THE DECK AFTER EACH SORT.

When you have finished sorting for Section IV you should stop and read the job titles which are remaining. You may wish to make a list of these job titles so you can go to the INFOE career microfiche and review the job titles which match your interests. (*Note: The microfiche have the same numbering system as the pinsort cards.) If you wish further information or have any questions, see your counselor or teacher.

APPENDIX C

THE SECONDARY-POSTSECONDARY INFOE PINSORT QUESTIONNAIRE

I. INTERESTS: What types of interests do you have which would influence your selection of a job? Circle the sorting code numbers next to the responses which best relate to your interests.

Working With Information - Using information, ideas, facts, or figures. Which ways of working with information interest you? Select only one of the following three. If you have no preference, skip this area and move on to "Working With People."

Sorting Code:

1. I would be interested in interpreting facts. Example: figuring ways of doing new things, keeping track of many things at once, and analyzing information.

2. I would be interested in organizing and using information. Example: gathering information and putting it together.

3. I would be interested in copying, sorting and putting things together. Example: copying, following step-by-step plans, and comparing and sorting things.

Working With People - There are many different ways to work with people. Which would interest you? Select only one of the following five. If you have no preference, skip this area and move on to "Working With Things."

Sorting Code:

4. I would be interested in giving counsel to other people. Example: helping a person find solutions to personal, legal, medical or other problems.

5. I would be interested in discussing and bargaining while working with others. Example: exchanging information and opinions or bargaining with others.

6. I would be interested in instructing or supervising while working. Example: teaching and explaining things, as well as assigning work to others.

7. I would be interested in selling or persuading while working. Example: selling things or convincing people of something.

8. I would be interested in a job where I could be assisting others. Example: being pleasant to customers or giving instructions.

Working With Things - Working with tools, instruments, machines, materials and products. There are several different ways of working with things: doing precision work, operating equipment or handling things. Which would interest you? Select only one of the following three. If you have no preference, skip this area and move on to "Working Conditions."

Sorting Code:

9. I would be interested in precision work. Example: adjusting and repairing equipment or using instruments and tools.

10. I would be interested in operating equipment. Example: running office, factory or construction equipment.

11. I would be interested in handling materials. Example: removing materials from a machine, sorting small parts or moving things from one place to another.

II. WORKING CONDITIONS: Which type of working conditions would you prefer? Circle the sorting code by your preference for working conditions.

I would prefer work that is mostly:

Sorting Code:

12. Outside

13. Inside

14. Inside at a desk

III. EDUCATION AND TRAINING: How much education and training will you have when you enter your career field? Consider your present education plus additional education you would like to complete. Circle the sorting code for the longest training program you would be willing to complete.

Sorting Code:

15. I would not like to finish any special training or education before starting my job.

16. I would be willing to complete high school and a short training period before starting to work.

17. I would be willing to complete up to one year of special training for a job (formal on-the-job training or full-time schooling)

18. I would be willing to complete up to two or three years of special training for a job (apprenticeship or full-time schooling).

19. I would be willing to complete a four-year college program or equivalent for a job.

20. I would be willing to complete any amount of education for a job (including graduate school training or equivalent).

IV. PHYSICAL LIMITATIONS: Your physical abilities may affect your job choice. Rate your physical abilities by circling the appropriate sorting codes.

(*NOTE: To sort for Section IV (21-28), turn the pin-sort deck so the right side is facing up.)

How would you rate your eyesight? If your eyesight is good without glasses, skip 21 and 22.

Sorting Code:

21. I would rate my eyesight as good with the aid of eye glasses.

22. I would rate my eyesight as poor to fair.

How would you rate your hearing? If your hearing is good without a hearing aid, skip 23 and 24.

23. I would rate my hearing as good with a hearing aid.

24. I would rate my hearing as poor to fair.

How would you rate your ability to do heavy work? If you are able to and willing to lift and move heavy objects, skip 25 and 26.

25. I would rate my ability to do heavy work as

good but I would not be interested in doing much of it.

26. I would rate my ability to do heavy work as poor to fair, or I would not be interested in doing heavy work.

Do you have any physical disabilities which would affect your job selection? For example, are you restricted to a wheelchair or have the loss of a limb? If you have no physical disabilities, skip 27 and 28.

27. Yes, I have limited use of one limb.

28. Yes, I do have a major physical disability (arm, hand or leg missing).

V. ABILITIES: What kinds of things come easily to you? Rate your own abilities compared to other people in general by circling the appropriate sorting codes.

(*NOTE: To sort for Sections V, VI and VII (29-50) turn the pinsort deck over.)

How good are you at doing fine work with your hands and fingers? If you can handle small things easily, quickly and accurately, skip 29 and 30.

Sorting Code:

29. I would rate my ability for doing fine work with my hands and fingers as fairly good.

30. I would rate my ability for doing fine work with my hands and fingers as poor.

How good is your eye for details? If you can easily find errors in words or numbers, skip 31 and 32.

Sorting Code:

31. I would rate my eye for details as fairly good.

32. I would rate my eye for details as poor.

How good are you with vocabulary? If you can easily tell when words have the same or different meanings, skip 33 and 34.

33. I would rate my ability with vocabulary as fairly good.

34. I would rate my ability with vocabulary as poor.

How good are you with basic arithmetic? If you are able to add, subtract, multiply and divide quickly and correctly, skip 35 and 36.

35. I would rate my ability with arithmetic as fairly good.

36. I would rate my ability with arithmetic as poor.

Are you able to catch on to new things easily? If you are able to understand written and verbal instructions easily, skip 37 and 38.

37. I would rate myself as fairly good at catching on to new things.

38. I would rate myself as poor at catching on to new things.

VI. EARNINGS: Wages often play a major role in one's selection of a job. How much would you want to make working full-time before you would consider a job? Circle the appropriate sorting code for the amount you would like to earn as a beginning salary for full-time work.

Sorting Code:

39. At least minimum wage - $399.00 per month

40. At least $400.00 - $499.00 per month

41. At least $500.00 - $699.00 per month

42. At least $700.00 - $999.00 per month

43. At least $1,000.00 per month

NOTE: Do this area only if you wish to sort for subject matter areas without sorting the previous six sections. However, if you have sorted the other six sections and still have a large number of cards remaining on your sorter, you may wish to do the additional sort for subject matter areas.

VII. RELATED SUBJECT AREAS: Many of the courses you take

in school relate to job opportunities you may be considering for your future. Circle the sorting code for one of the following subject areas if you would like to explore jobs which are related to it. For example, if you would like to see what jobs are related to an English class, circle 44, etc.

Sorting Code:

44. English

45. Mathematics

46. Natural Science

47. Social Studies

48. Health or Physical Education

49. Fine Arts (Art, Music, and Foreign Language)

50. Vocational Education (Distributive Education, Office Occupations, Home Economics, Industrial Education and Vocational Agriculture)

APPENDIX D

FILMSTRIP TITLES AND DESCRIPTIONS

A. Orientation to the World of Work - contains three basic units: (1) Where to look for a job, (2) Understanding your paycheck and (3) How to keep your job.

B. Agricultural Careers - contains introduction and information on work of general farm hand, dairy farm hand, livestock caretaker, farm mechanic's helper, truck farmer and commercial nursery worker.

C. Automative Careers - contains introduction and information on service station attendant, tire recapper, upholsterer's helper, auto body repairer's helper and auto mechanic's helper.

D. Clerical Careers - contains introduction and information on messenger, receptionist, office clerk, clerk typist, file clerk and bindery worker.

E. Clothing Careers - Contains introduction and information on knitter, drapery operator, mender, presser, laundry worker and dry cleaning machine operator.

F. Construction Careers - contains introduction and information on insulation worker, air hammer operator, bricklayer's helper, plumber's helper, electrician's helper, carpenter's helper and painter.

G. Distribution Careers - contains introduction and information on grocery bagger, warehouse worker, fork lift operator and stock clerk.

H. Environmental Careers - contains introduction and information on window cleaner, car washer, rug cleaner, garbage truck driver, tree trimmer, grounds keeper and animal lab technician.

I. Food Processing Careers - contains introduction and information on short order cook, baker's helper, milk processing worker, ice cream machine operator, slaughter house butcher and meat cutter.

J. Manufacturing Careers - contains introduction and information on general laborer, materials handler, packaging worker, furniture upholsterer's helper, welder's helper and sewing machine operator.

K. Medical Careers - contains introduction and information on ward maid, orderly, hospital ward clerk, nurse's aide and licensed practical nurse.

L. Personal Service Careers - contains introduction and information on bellhop, custodian, domestic maid, kitchen helper, waiter/waitress, cosmetologist's helper, manicurist and child care aide.

M. Public Service Careers - contains introduction and information on school crossing guard, meter maid, parking meter collector, meter reader, security guard and library assistant.

N. Sales Careers - contains introduction and information on gift wrapper, driver-route salesperson, display person, cashier, catalog order clerk and general salesperson.

O. Transportation Careers - contains introduction and information on parking lot attendant, local truck driver, long-haul truck driver, taxicab driver, airport service person and motorcycle mechanic's helper.

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